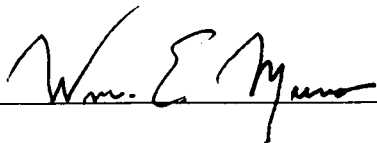


FIVE YEAR REVIEW REPORT
FOREST WASTE DISPOSAL LANDFILL SITE
OTISVILLE, MICHIGAN

Pursuant to CERCLA
42 U.S.C. § 9621[©]

Prepared by:
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Date

I. INTRODUCTION

A. Authority and Purpose

The U.S. Environmental Protection Agency (U.S. EPA), Region 5, conducted this statutory five-year review under Section 121[©] of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The purpose of a statutory five-year review is to evaluate whether a completed remedial action remains protective of human health and the environment at sites where hazardous waste remains on-site at levels that do not allow for unlimited use and unrestricted exposure. The Type Ia review conducted for this site is applicable to a site at which response is ongoing. This review will be placed in the Site files and local repository for the Forest Waste Disposal Landfill Site (“Site” or “FWD Site”) in Otisville, Michigan.

B. Site History

The Site is located in the rural southeast corner of Section 8, Forest Township, Genesee County, Michigan. The Site is 112 acres and was operated as an airport, a landfill for solid waste disposal and lagoons for liquid waste disposal. The landfill consists of approximately 11 of the 112 acres and the lagoons for liquid disposal consisted of approximately 1 acre.

The property owners received a license from the State of Michigan in 1972 to receive general refuse and industrial and liquid waste. The landfill was also given permission to accept, on occasion, hazardous wastes under Michigan Department of Natural Resource (MDNR) and Genesee County Health Department supervision. Wastes containing PCBs and PBBs are documented to have been disposed at the site. Waste was accepted from 1973 to 1978. The State did not renew the license in 1978 due to operational and other various violations.

In September 1983 the site was placed on the NPL. An Initial Remedial Measures Record of Decision (ROD) was signed in May 1984 for the installation of a fence at the Site. U.S. EPA completed the fence installation in August 1984. The Remedial Investigation was initiated in December 1983, and completed in 1987. U.S. EPA completed a Phased Feasibility Study Report for the Site lagoons in April 1986 and a Feasibility Study Report for the landfill and ground water in January, 1988. In June 1986, U.S. EPA documented its selected remedial alternative for the lagoons in a ROD, with which the State of Michigan concurred. The 1986 ROD required removal and offsite treatment and disposal of contaminated lagoon sediment, sludge and soil. The Remedial Design for the lagoon remediation was completed by U.S. EPA’s contractor. A group of Potentially Responsible Parties (PRPs) completed the bulk of the lagoon remediation in 1988, pursuant to the terms of a Unilateral Administrative Order dated June 30, 1988. The Construction Completion Report was approved in 1990.

A third ROD was executed by U.S. EPA on March 31, 1988 for the Site. This ROD addressed closure of the landfill and monitoring of ground water. U.S. EPA modified the

1988 ROD with an Explanation of Significant Difference (ESD) on May 4, 1993. The 1993 ESD deleted the requirement of a soil-bentonite slurry wall vertical barrier with a dewatering system surrounding the landfill and collection and treatment of the ground water from the dewatering system.

In August 1993, the U.S. EPA issued a Unilateral Administrative Order wherein a group of PRPs were ordered to excavate and dispose of buried drums on the Site that had been identified during the remedial design activities. All associated contaminated soil was also to be disposed of. The bulk of these removal activities were completed in the summer and fall of 1993.

Construction of the landfill cap began in the fall of 1996 and will be completed during spring 1997. A ground water investigation and monitoring program is on-going.

II. DISCUSSION

A. Remedial Objectives of 1986 ROD for Lagoons

The risk to human health and the environment identified in the 1986 ROD for the lagoons is ingestion of lagoon sediment. The lagoons were also identified as a source of ground water contamination. Local residents utilize private wells for their drinking water. The remedy selected in the 1986 ROD to address these risks included:

- ◆ Excavation of all contaminated sludges and sediment from six of the nine lagoons;
- ◆ On-site solidification of the excavated sludges and sediment;
- ◆ Off-site disposal of solidified sludges and sediments in a RCRA-permitted landfill;
- ◆ No action for three of the nine lagoons which did not pose an unacceptable risk to human health or the environment.

B. Remedial Objectives of 1988 ROD and 1993 ESD for Landfill and Ground Water

Remedial objectives for the landfill are stated in the 1988 ROD as:

- (1) Prevent direct contact exposure to soil or landfill sources that contain contaminant levels in excess of target concentrations for:
 - noncarcinogenic health effect protection (based on reference doses)
 - excess lifetime cancer risk in the range of 10^{-4} to 10^{-7}
- (2) Prevent migration of contaminants from the soil or sources in the landfill to a drinking water aquifer that would contaminate ground water to concentrations:
 - greater than MCLs
 - exceeding the lifetime health advisories
 - exceeding levels for noncarcinogenic health effect protection (based on reference doses)
 - resulting in an excess lifetime cancer risk range of 10^{-4} to 10^{-7}

- (3) Prevent migration of contaminants from the soil and sources in the landfill to a surface water body that would result in contamination to levels greater than the Federal Ambient Water Quality Criteria or State of Michigan Surface Water Quality Guideline Levels for the Protection of Aquatic Life.
- (4) Control future release of contaminants to ensure protection of human health and the environment (SARA Section 121(d))
- (5) Consider a preference for remedies that permanently and significantly reduce toxicity, mobility, or volume of hazardous substances through treatment to the greatest extent practicable (SARA Section 121(b))

Remedial objectives for the ground water are stated in the 1988 ROD as:

- (1) Assure the quality of ground water in drinking water aquifers and prevent migration of contaminants to a drinking water aquifer that would contaminate ground water to concentrations:
 - greater than the MCLs
 - exceeding the lifetime health advisories
 - exceeding levels for noncarcinogenic health effect protection (based on reference doses)
 - exceeding a lifetime cancer risk range of 10^{-4} to 10^{-7}
- (2) Prevent the migration of contaminants to surface water body that would result in contamination to levels greater than the Federal Ambient Water Quality Criteria or State of Michigan Surface Water Quality Guideline Levels for the Protection of Aquatic Life.

The identified shallow and deep aquifers, as well as the bedrock aquifer underneath the Site, are considered drinking water aquifers. The shallow aquifer is not currently used as a drinking water source. This aquifer, however, if unaffected by the site contaminants, would be of sufficient quality and quantity to be used as a drinking water source.

The remedy selected in the 1988 ROD to meet these objectives included:

- ◆ Deed restrictions
- ◆ RCRA cap on the landfill
- ◆ Soil-bentonite slurry wall vertical barrier (slurry wall) and dewatering system
- ◆ Limited drum removal and incineration of drum contents and contaminated soils
- ◆ Ground water monitoring

The 1993 ESD modified the 1988 ROD by:

- ◆ Deleting the requirement for the soil-bentonite slurry wall vertical barrier and dewatering system; and
- ◆ Allowing for the treatment and off-site landfilling of some of the drum contents.

C. Removal and Remedial Actions

Remedial Construction Activities for Lagoons

Remedial construction activities for the lagoons was predominantly completed in 1988 in accordance with the requirements of the 1986 ROD. The Construction Completion Report was approved in 1990.

Removal Construction Activities for the Landfill

The PRPs completed the bulk of the drum removal activities in the summer and fall of 1993.

Remedial Construction Activities for Landfill and Ground Water

The PRPs began remedial action activities for the landfill in March 1996. The landfill cap is substantially complete as of December 1996. Activities that will be completed in the spring of 1997 include quality control issues with the liner, seeding of the landfill cap, fencing and regrading and installation of permanent access roads.

Ground water monitoring has been occurring regularly since 1990. No significant ground water contamination was found until 1995. In 1995 the State requested that the ground water investigation be expanded to include the north side of the landfill. The PRPs installed 2 new monitoring wells to the north of the Site and found some ground water contamination. The PRPs are currently investigating the extent of the ground water contamination to the north of the Site.

Activities and Schedule for Site Completion

Long-term operation and maintenance of the landfill cover and ground water monitoring are the responsibility of the PRPs. The Site is currently owned by the State of Michigan, but the Township plans to take title from the State as soon as the remedial action on the landfill is complete. The Township or the State will place deed restrictions on the property when it is transferred to the Township.

According to the Consent Decree, Docket No. 94-40462, the Work will not be complete until the PRPs notify U.S. EPA that all phases of the Work have been completed (including O&M). At that time a pre-certification inspection will be completed by U.S. EPA. The PRPs will then submit a written report stating that the Work has been completed in full satisfaction of the requirements of the Consent Decree. Upon U.S. EPA approval the report, the requirements of the Consent Decree will have been completed.

The Statement of Work (SOW) attached to the Consent Decree states that the PRPs will continue ground water monitoring for a minimum of five years or until U.S. EPA approves a

petition by the PRPs to discontinue all or part of the monitoring program. It is difficult at this time to estimate how long U.S. EPA will require the PRPs to continue ground water monitoring since the ground water investigation is still in progress.

III. RECOMMENDATIONS

The remedy for the lagoons was effective at protecting human health and ground water. All contaminated soils and sludges were removed from the Site. The remedy for the landfill and ground water is still being implemented and it is recommended that these activities continue on their current schedule including the ground water investigation. Upon completion of the ground water investigation, a determination should be made regarding the need for ground water remediation.

IV. STATEMENT ON PROTECTIVENESS

I certify that the lagoon remedy selected for this site remains protective of human health and the environment.

V. NEXT FIVE-YEAR REVIEW

The next five-year review will be conducted by March 31, 2002, which is five years from the date of this review.